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REVIEWS AND NOTES.

The Review of Economic Statistics, Preliminary Volume, Number 1, January, 1919. Harvard University Press.

Harvard University in the spring of 1917 appointed a Committee on Economic Research. An article by the chairman of this committee, Professor C. J. Bullock, printed nearly two years earlier* and doubtless one of the influences leading to the establishment of this committee, pointed out that existing provisions for economic research, confined as they are to the individual investigator and governmental agencies, are entirely inadequate. The large and increasing mass of material flowing from government sources needs careful verification and interpretation before it can be made useful. This interpretation is seldom well made by the government because in many of these fields political or social implications tie the hands of the official, color his vision of the meaning of his results, or limit him to severely practical and obvious deductions. Endowments for research in this field are sorely needed and universities are the best agencies to administer them.

The Committee on Economic Research decided to make its initial effort in the field of economic statistics and this new serial, under the able editorship of Professor Warren M. Persons, is the result.

From the fact that the subscription price of the quarterly and its monthly supplements is \$100 a year it may be fair to infer that the committee plans to make at least this part of its work approximately self-supporting. But the new serial without its supplements is also to be furnished gratuitously to a limited number of university libraries.

The object of the *Review* is apparently divisible into two parts, the ultimate and the immediate purpose. The ultimate purpose "is to promote the collection . . . and interpretation of economic statistics . . . for business and scientific purposes" (Prefatory Statement). The immediate purpose is to "deal chiefly with these industrial, commercial, and financial data which ordinarily serve as the basis for judgments concerning fundamental business conditions" (*Ibid.*).

These statements suggest certain questions, such as, What is the nature and scope of economic statistics? How, if at all, does economic statistics differ from business statistics? If business purposes and scientific purposes in one or both of these fields (in case they are not identical) lead in different directions how are the two sorts of purposes to be reconciled? But this preliminary number avoids the consideration of such questions by confining its attention to the immediate purpose. We may hope that in the future the *Review of Economic Statistics* will give some share of its attention to questions of the sort just mentioned which grow naturally out of its ultimate purpose.

What of the contents of the first number of this preliminary volume?

"Perhaps the most important service rendered by such journals as the *Commercial and Financial Chronicle*, *Bradstreet's*, the *Iron Age* and the

*Harvard Graduate's Magazine, 23: (1914-15), 601-610.

New York Journal of Commerce is to collect and publish regularly statistical series with weekly or monthly items" (page 5). The government has given little attention to this important field. "None of the journals which collect and publish fundamental statistics apply any except the simplest and most obvious methods of analyzing the data presented" (*Ibid.*). Errors and discrepancies in the material are not infrequent. The data included are usually representative rather than complete. To the task of analyzing and interpreting these important data very little attention has thus far been given and this is the immediate work to which the *Review of Economic Statistics* hopes to contribute.

This first issue is devoted exclusively to developing a method of handling these business statistics whereby the significance of each item as an index of current business conditions can be ascertained. Perhaps some notion of this method can best be conveyed by an example and for that purpose I have chosen the monthly figures for the production of pig iron in the United States. These figures, like the others studied, are assumed as a working hypothesis to be subject to (1) a long time tendency, in this case to an increase of output, (2) a seasonal variation within the year, (3) a cyclical movement depending upon the alternation of periods of business prosperity and depression, and (4) other residual variations. This hypothesis can be proved to be correct or incorrect in any case only by contriving methods of measuring the effects of these various influences and with their aid discovering whether each influence was or was not felt.

By previous testing it had been found that of the two methods used to measure a long time tendency, namely, the method of moving averages and the method of fitting a straight line or a curve to the data, the latter was the better. So by the method of moments a straight line was fitted to the series of figures showing the annual output of pig iron 1903-16. The result indicated an annual increment in the monthly output of 95,200 tons and opened the way for so correcting the figures as to eliminate this long time tendency or secular trend from the series.

The next problem was to discover whether there is any seasonal variation in the series of figures with the further purpose, if one is found, of measuring its magnitude and introducing the needed corrections. The difficulties in the way of allowing for the different lengths of the months, calendar or statistical, and for the proper treatment of Sundays led to a decision not to attempt separating these artificial differences from the real ones due to varying degrees of activity in equal periods of time.

To determine the presence or absence of seasonal variation the graphic method was tried. This did not reveal any general seasonal variation traceable in every year or even in a majority of the years but showed rather that the seasonal variation, if present at all, was masked by the cyclical movement between prosperity and depression. This method of studying seasonal changes by examining departures from the yearly average proving unsatisfactory, attention was directed to monthly changes measured in link relatives or percentages that one month's figures make of those of the preceding month. The distribution of these link relatives in any series

usually shows a characteristic variation between two consecutive months with occasional wide departures obviously due to other influences upsetting the normal trend of change. The median is accepted as the best index of the characteristic variation between two consecutive months. By this method a measure of seasonal variation is obtained and the way is opened for estimating and eliminating the influence of these variations.

The remaining problems are to measure the influence of the alternate waves of prosperity and business depression and lastly the influence of irregular factors which occasionally interfere with or override one or more of the factors already analyzed. To the preliminary question whether there is a "law" of business cycles under which prosperity recurs at intervals defined by the recurrence of sun spots or of rainfall and other weather conditions favorable to good crops or by other causes, Professor Persons returns the answer "not proven." He finds it impracticable to separate the cyclical from the irregular fluctuations, although it is relatively easy to separate secular trend and seasonal variation from each other and from the cyclical and irregular fluctuations taken together.

The various series which thus far have been studied separately must next be compared and for that purpose some unit of each series is needed which will facilitate a comparison between the series. This need is met by recourse to the standard deviation.

At this point the discussion in the present issue comes to a close leaving for later numbers the development of a method of studying the relations of each series to the others and to general economic conditions and an examination of the question whether generalizations of the type described which have been derived from the past can be applied to the future.

The new periodical promises well and, I doubt not, will speedily make an important place for itself. If a distinction is to be recognized between economic statistics and business statistics, little in the first number indicates that the new review will devote itself to the former rather than the latter field. Nor does the word "Review" in the title seem entirely satisfactory because that word both by derivation and by usage implies that much attention will be given to evaluating the work of others. Archives or Repository or Bulletin or Contributions seems to describe more accurately than Review the probable content of the new serial. May I enter a mild protest also on behalf of the librarians. The size of the new publication, 11 by 16 inches, makes it awkward to house on shelves with other economic literature. In 1853, I believe, the American representative to the first International Statistical Congress came back with the report that he met with constant protests against the inconvenient size of the American census volumes and since that date they have uniformly appeared as quartos. No one today would think of increasing their size and much might be said for reducing it. The charts in the present issue might be divided or folded in or reduced so that a hand glass would be needed to read them. In my opinion the series would be much more serviceable if it should be reduced to a smaller page.

Cornell University.

WALTER F. WILLCOX.